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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/533,613	03/22/2000	Fred E. Stanke	21964-708	7897

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EXAMINER	
PHAM, HOA Q	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 02/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/533,613	STANKE ET AL.	
	Examiner	Art Unit	
	Hoa Q. Pham	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the corresp ndence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *10/03* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodera et al (5,695,601) in view of Norton et al (5,486,701) and Hignette et al (5,191,393).

Regarding claims 24 and 28, Kodera et al (of record) discloses a wafer processing station (20) and a metrology station (30) apart from but coupled to the processing station wherein the metrology station comprises an ultraviolet light source (column 3, lines 30-37) illuminating a measurement region of a surface of a wafer (10). (See figure 3). Kodera et al does not explicitly teach steps of: (1) measuring spectral content of the broadband light beam reflected from the wafer, (2) measuring the spectral content of the broadband light beam which has not been reflected from the wafer, and determining the wafer based on the first and second measurements; however, such a feature is known in the art, for example, as taught by Norton et al. Norton et al, from the same field of endeavor, teaches steps of: (1) measuring spectral content of the broadband light beam (46) reflected from the wafer (3) by detector (93), (2) measuring the spectral content of the broadband light beam (48) which has not been reflected from the wafer by detector (95), and determining the wafer based on the first and second

measurements the measurements, where the second measurement is used to correct for system characteristics (correct for lamp noise) (see column 5 line 60 through column 6 line 20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the optical detection unit of Kodera et al by an optical inspection system of Norton et al. The rationale for this modification would have arisen from the fact that both systems are used for measuring the thickness of the wafer; a substitution one for another is generally recognized as being within the level of ordinary skill in the art. Hignette et al teaches that the light source (22) and fiber (8) are located outside of the metrology device (2) (see figures 1 and 7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Kodera et al and Norton et al an optical fiber so that the light source is located outside the measuring device as taught by Hignette et al. The rationale for this modification would have arisen from the fact that by locating the light source outside the device would avoid the harmful effects of the light source as suggested by Hignette et al (column 5, lines 62-68).

Regarding claim 25, Norton et al teaches that both beams (46, 48) pass through their respective spectrometer pinholes substantially parallel (column 3 lines 41-49). Thus, the first and second measurements are obtained simultaneously.

Regarding claim 26, column 1, lines 18-19 of Norton et al for UV range.

Regarding claims 27 and 29, see column 2, lines 4-16 of Norton et al for the use of Xenon lamp, which covers from UV to near infrared.

3. Claims 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodera et al in view of Adams (4,899,055) and Hignette et al.

Regarding claims 24 and 28, Kodera et al (of record) discloses a wafer processing station (20) and a metrology station (30) apart from but coupled to the processing station wherein the metrology station comprises an ultraviolet light source (column 3, lines 30-37) illuminating a measurement region of a surface of a wafer (10). (See figure 3). Kodera et al does not explicitly teach steps of: (1) measuring spectral content of the broadband light beam reflected from the wafer, (2) measuring the spectral content of the broadband light beam which has not been reflected from the wafer, and determining the wafer based on the first and second measurements; however, such a feature is known in the art, for example, as taught by Adams. Adams, from the same field of endeavor, teaches steps of: (1) measuring spectral content of the UV-broadband light beam reflected from the wafer (24,26) by detector (28), (2) measuring the spectral content of the broadband light beam which has not been reflected from the wafer by detector (32), and determining the wafer based on the first and second measurements the measurements, where the second measurement is used to correct for system characteristics (monitoring the output 14 of the lamp 12) (see figure 2, column 5 lines 7-19, and column 2 lines 9-36). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the optical detection unit of Kodera et al by an optical inspection system of Adams. The rationale for this modification would have arisen from the fact that both systems are used for measuring the thickness of the wafer; a substitution one for another is generally recognized as being within the level of

ordinary skill in the art. Hignette et al teaches that the light source (22) and fiber (8) are located outside of the metrology device (2) (see figures 1 and 7). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Kodera et al and Adams et al an optical fiber so that the light source is located outside the measuring device as taught by Hignette et al. The rationale for this modification would have arisen from the fact that by locating the light source outside the device would avoid the harmful effects of the light source as suggested by Hignette et al (column 5, lines 62-68).

Regarding claim 25, Adams teaches that both beams pass through their beam splitter (20) substantially parallel. Thus, the first and second measurements are obtained simultaneously.

Regarding claim 26, see abstract of Adams for UV range (240-300 nm).

Regarding claims 27 and 29, Adams teaches the use of Mercury lamp which covers UV range and does not teaches the use of Xenon lamp, which includes UV light and visible light. However, it would have been obvious to one having ordinary skill in the art to replace the lamp of Adams by a Xenon lamp because they are function in the same manner. In addition, using broader range would increase the advantage of the measurement.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Golzarian (6,406,641) discloses a liquid etch endpoint detection and process metrology.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (571) 272-2426. The examiner can normally be reached on 6:30 AM to 5 PM, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Hoa Q. Pham
Primary Examiner
Art Unit 2877

HP
January 24, 2004